TDMS No. 20009 - 03
Test Type: CHRONIC
Route: DOSED WATER
Species/Strain: RATS/F 344/N

P03: INCIDENCE RATES OF NON-NEOPLASTIC LESIONS BY ANATOMIC SITE(a)

beta-Picoline CAS Number: 108-99-6

Date Report Requested: 05/27/2011 Time Report Requested: 10:09:55 First Dose M/F: 11/18/04 / 11/19/04

Lab: BAT

F2\_R2

C Number: C20009

**Lock Date:** 06/05/2008

Cage Range: ALL

Date Range: ALL

Reasons For Removal: ALL

Removal Date Range: ALL

Treatment Groups: Include ALL

Study Gender: Both

**TDMSE Version:** 2.4.1.0\_004

**PWG Approval Date:** 06/29/2010

Test Type: CHRONIC

Route: DOSED WATER

**TDMS No.** 20009 - 03

Species/Strain: RATS/F 344/N

beta-Picoline **CAS Number:** 108-99-6

Date Report Requested: 05/27/2011 Time Report Requested: 10:09:55 First Dose M/F: 11/18/04 / 11/19/04

FISCHER 344 RATS MALE	0 mg/l	156.25 mg/l	312.5 mg/l	625 mg/l
Disposition Summary				
Animals Initially In Study	50	50	50	50
Early Deaths	••			
Moribund Sacrifice	9	12	15	23
Natural Death	8	7	3	3
Survivors				
Terminal Sacrifice	33	31	32	24
Animals Examined Microscopically	50	50	50	50
ALIMENTARY SYSTEM				
Esophagus	(50)	(50)	(50)	(50)
Hyperplasia, Squamous		1 (2%)		
Inflammation, Suppurative	1 (2%)	•		
Intestine Large, Cecum	(45)	(47)	(48)	(48)
Inflammation, Chronic Active				1 (2%)
Necrosis	1 (2%)			. ,
Intestine Large, Colon	(47)	(49)	(49)	(49)
Parasite Metazoan	3 (6%)	4 (8%)	7 (14%)	1 (2%)
Intestine Large, Rectum	(47)	(49)	(49)	(50)
Infiltration Cellular, Mixed Cell	, ,	1 (2%)	• •	
Parasite Metazoan	2 (4%)	5 (10%)	3 (6%)	5 (10%)
Intestine Small, Duodenum	(48)	(49)	(49)	(50)
Intestine Small, Ileum	(46)	(47)	(48)	(49)
Inflammation, Chronic Active		1 (2%)	•	•
Intestine Small, Jejunum	(45)	(47)	(48)	(49)
Inflammation, Chronic Active	1 (2%)			
Liver	(50)	(50)	(50)	(50)
Angiectasis	1 (2%)	·	1 (2%)	•
Atrophy			1 (2%)	
Basophilic Focus	15 (30%)	14 (28%)	16 (32%)	10 (20%)
Clear Cell Focus	13 (26%)	23 (46%)	20 (40%)	15 (30%)
Congestion	, ,	. ,	. ,	1 (2%)
Degeneration, Cystic	3 (6%)	6 (12%)	7 (14%)	2 (4%)
Eosinophilic Focus	7 (14%)	1 (2%)	2 (4%)	5 (10%)

a - Number of animals examined microscopically at site and number of animals with lesion

beta-Picoline

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Lab: BAT

	0 mg/l	156.25 mg/l	312.5 mg/l	625 mg/l	
Fatty Change	7 (14%)	6 (12%)	7 (14%)	9 (18%)	
Fibrosis			1 (2%)		
Hepatodiaphragmatic Nodule	4 (8%)	3 (6%)	2 (4%)	6 (12%)	
Inflammation, Chronic Active	, ,	3 (6%)	3 (6%)	1 (2%)	
Mixed Cell Focus	6 (12%)	3 (6%)	6 (12%)	3 (6%)	
Necrosis	2 (4%)	3 (6%)	•	2 (4%)	
Vacuolization Cytoplasmic	15 (30%)	12 (24%)	12 (24%)	16 (32%)	
Bile Duct, Hyperplasia	40 (80%)	36 (72%)	44 (88%)	42 (84%)	
Centrilobular, Atrophy	,	1 (2%)	,	,	
Centrilobular, Necrosis	1 (2%)	( /	1 (2%)		
Periportal, Fibrosis	. (=,-,	1 (2%)	(= / - /		
Periportal, Inflammation	1 (2%)	(=7-7)	1 (2%)		
Vein, Dilatation	(=,2,	1 (2%)	(= / - /		
Mesentery	(4)	(8)	(4)	(6)	
Fat, Necrosis	1 (25%)	6 (75%)	3 (75%)	5 (83%)	
Pancreas	(49)	(50)	(50)	(48)	
Cyst	1 (2%)	(00)	2 (4%)	(10)	
Hyperplasia	2 (4%)		2 (170)	1 (2%)	
Infiltration Cellular	2 (178)	1 (2%)	1 (2%)	. (= /0)	
Lipomatosis		1 (270)	1 (270)	1 (2%)	
Acinus, Atrophy	18 (37%)	31 (62%)	31 (62%)	25 (52%)	
Salivary Glands	(50)	(50)	(50)	(50)	
Atrophy	(30)	(50)	1 (2%)	(00)	
Infiltration Cellular		1 (2%)	1 (270)		
Duct, Inflammation		1 (2%)			
Stomach, Forestomach	(50)	(50)	(50)	(50)	
Angiectasis	(30)	1 (2%)	(50)	(30)	
Edema		1 (270)	1 (2%)		
Erosion	1 (2%)		1 (270)		
Fibrosis	1 (2%)	6 (12%)	2 (4%)	1 (2%)	
Hyperplasia, Squamous	15 (30%)	18 (36%)	7 (14%)	17 (34%)	
Inflammation	13 (30 /0)	1 (2%)	7 (1470)	2 (4%)	
Ulcer	2 (4%)	5 (10%)	2 (4%)	2 (4%)	
Stomach, Glandular	2 (4%) (50)	(50)	2 (4%) (50)	2 (4%) (50)	
Angiectasis	(50)	(50) 1 (2%)	(50)	(50)	
Erosion	1 (2%)	3 (6%)			

a - Number of animals examined microscopically at site and number of animals with lesion

**TDMS No.** 20009 - 03

Test Type: CHRONIC

Route: DOSED WATER

beta-Picoline CAS Number: 108-99-6 Date Report Requested: 05/27/2011 Time Report Requested: 10:09:55 First Dose M/F: 11/18/04 / 11/19/04

Lab: BAT

FISCHER 344 RATS MALE	0 mg/l	156.25 mg/l	312.5 mg/l	625 mg/l	
Fibrosis	1 (2%)				
Hyperplasia	1 (2%)				
Inflammation, Chronic Active	4 (8%)	6 (12%)	4 (8%)	3 (6%)	
Metaplasia, Squamous	()	1 (2%)	()	- ()	
Ulcer		( /		2 (4%)	
Tongue	(0)	(0)	(2)	(1)	
CARDIOVASCULAR SYSTEM					
Blood Vessel	(50)	(50)	(50)	(50)	
Aorta, Mineralization	. ,	1 (2%)	, ,	, ,	
Heart	(50)	(50)	(50)	(50)	
Cardiomyopathy	49 (98%)	50 (100%)	50 (100%)	49 (98%)	
Mineralization	,	1 (2%)	,	,	
Atrium, Thrombosis	5 (10%)	5 (10%)			
Epicardium, Inflammation, Chronic Active	,	,		1 (2%)	
Valve, Inflammation, Chronic Active		1 (2%)		, ,	
ENDOCRINE SYSTEM					
Adrenal Cortex	(50)	(50)	(50)	(50)	
Accessory Adrenal Cortical Nodule	2 (4%)			2 (4%)	
Hyperplasia	20 (40%)	31 (62%)	27 (54%)	21 (42%)	
Necrosis	1 (2%)	•	1 (2%)	•	
Vacuolization Cytoplasmic	3 (6%)		• •	1 (2%)	
Adrenal Medulla	(50)	(49)	(49)	(50)	
Hyperplasia	12 (24%)	18 (37%)	13 (27%)	7 (14%)	
Islets, Pancreatic	(50)	(50)	(50)	(50)	
Hyperplasia	1 (2%)	1 (2%)	1 (2%)	1 (2%)	
Parathyroid Gland	(50)	(47)	(48)	(48)	
Hyperplasia	1 (2%)	. ,	. ,		
Pituitary Gland	(50)	(49)	(50)	(49)	
Cyst	2 (4%)	. ,	2 (4%)		
Metaplasia, Osseous	1 (2%)		• •	1 (2%)	
Necrosis	` '			1 (2%)	

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Date Report Requested: 05/27/2011

Lab: BAT

FISCHER 344 RATS MALE	0 mg/l	156.25 mg/l	312.5 mg/l	625 mg/l
Pars Distalis, Hyperplasia	16 (32%)	11 (22%)	19 (38%)	12 (24%)
Pars Intermedia, Hyperplasia			1 (2%)	
Pars Nervosa, Hyperplasia			1 (2%)	
Thyroid Gland	(50)	(50)	(50)	(50)
Congestion	1 (2%)			
C-cell, Hyperplasia	6 (12%)	4 (8%)	11 (22%)	7 (14%)
Follicle, Cyst		1 (2%)		1 (2%)
Follicular Cell, Hyperplasia		1 (2%)	1 (2%)	
GENERAL BODY SYSTEM				
Peritoneum	(2)	(1)	(1)	(2)
Inflammation, Chronic Active	* *			(2) 1 (50%)
GENITAL SYSTEM				
Epididymis	(50)	(50)	(50)	(50)
Degeneration, Fatty		1 (2%)		
Inflammation, Chronic Active			2 (4%)	2 (4%)
Preputial Gland	(50)	(50)	(50)	(50)
Cyst		1 (2%)	1 (2%)	
Hyperplasia, Squamous		1 (2%)		
Inflammation	15 (30%)	10 (20%)	10 (20%)	13 (26%)
Prostate	(49)	(50)	(50)	(50)
Hyperplasia	1 (2%)			1 (2%)
Hyperplasia, Adenomatous	1 (2%)			1 (2%)
Inflammation	31 (63%)	45 (90%)	45 (90%)	35 (70%)
Seminal Vesicle	(50)	(50)	(50)	(50)
Dilatation		1 (2%)		
Inflammation			2 (4%)	1 (2%)
Testes	(50)	(50)	(50)	(50)
Atrophy	3 (6%)	9 (18%)	5 (10%)	3 (6%)
Inflammation, Chronic Active	1 (2%)			
Interstitial Cell, Hyperplasia	12 (24%)	18 (36%)	17 (34%)	13 (26%)

a - Number of animals examined microscopically at site and number of animals with lesion

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Test Type: CHRONIC

Route: DOSED WATER Species/Strain: RATS/F 344/N

beta-Picoline

**TDMS No.** 20009 - 03

Test Type: CHRONIC

Route: DOSED WATER

Species/Strain: RATS/F 344/N

**CAS Number:** 108-99-6

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Lab: BAT

FISCHER 344 RATS MALE	0 mg/l	156.25 mg/l	312.5 mg/l	625 mg/l	
HEMATOPOIETIC SYSTEM					
Bone Marrow	(50)	(50)	(50)	(50)	
Lymph Node	(9)	(11)	(11)	(8)	
Congestion	1 (11%)				
Hyperplasia, Lymphoid	1 (11%)				
Deep Cervical, Ectasia				1 (13%)	
Deep Cervical, Hemorrhage		1 (9%)			
Deep Cervical, Infiltration Cellular				1 (13%)	
Mediastinal, Congestion	1 (11%)			,	
Mediastinal, Ectasia	1 (11%)	1 (9%)	4 (36%)	3 (38%)	
Mediastinal, Hemorrhage	, ,	, ,	1 (9%)	,	
Mediastinal, Hyperplasia	1 (11%)	1 (9%)	1 (9%)		
Mediastinal, Infiltration Cellular, Mixed Cell	, ,	1 (9%)	, ,		
Lymph Node, Mesenteric	(50)	(50)	(50)	(50)	
Congestion	1 (2%)	,	, ,	, ,	
Ectasia		2 (4%)	2 (4%)		
Inflammation, Granulomatous		, ,	1 (2%)		
Spleen	(50)	(50)	(50)	(50)	
Hematopoietic Cell Proliferation	1 (2%)	,	, ,	, ,	
Hyperplasia, Lymphoid		1 (2%)			
Inflammation, Granulomatous		, ,	1 (2%)		
Necrosis			,	1 (2%)	
Capsule, Hemorrhage		1 (2%)		,	
Capsule, Hyperplasia		,		1 (2%)	
Lymphoid Follicle, Depletion Cellular		1 (2%)		,	
Lymphoid Follicle, Hyperplasia	1 (2%)	,			
Thymus	(49)	(49)	(45)	(50)	
INTEGUMENTARY SYSTEM					
Mammary Gland	(50)	(49)	(50)	(50)	
Galactocele	12 (24%)	7 (14%)	9 (18%)	12 (24%)	
Hyperplasia	3 (6%)	6 (12%)	( /	5 (10%)	

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Lab: BAT

FISCHER 344 RATS MALE	0 mg/l	156.25 mg/l	312.5 mg/l	625 mg/l	
Inflammation		1 (2%)			
Skin	(50)	(50)	(50)	(50)	
Cyst Epithelial Inclusion	1 (2%)	(00)	(00)	(00)	
Hyperplasia, Squamous	2 (4%)				
Inflammation, Suppurative	1 (2%)				
Inflammation, Chronic Active	1 (2%)	1 (2%)			
Subcutaneous Tissue, Infiltration Cellular, Mixed Cell	,	1 (2%)			
Subcutaneous Tissue, Inflammation, Chronic Active				1 (2%)	
MUSCULOSKELETAL SYSTEM					
Bone	(50)	(50)	(50)	(50)	
Hyperostosis	1 (2%)	()	()	1 (2%)	
Inflammation, Chronic Active	( )	1 (2%)		( /	
Skeletal Muscle	(0)	(0)	(0)	(1)	
NERVOUS SYSTEM					
Brain	(50)	(50)	(50)	(50)	
Compression	5 (10%)	9 (18%)	8 (16%)	9 (18%)	
Hemorrhage	1 (2%)	3 (1373)	2 (4%)	3 (6%)	
RESPIRATORY SYSTEM					
Lung	(50)	(50)	(50)	(50)	
Foreign Body	(00)	(00)	(00)	1 (2%)	
Inflammation, Suppurative	1 (2%)			. (= ,0)	
Inflammation, Granulomatous	- (-',')			1 (2%)	
Alveolar Epithelium, Hyperplasia	12 (24%)	11 (22%)	12 (24%)	8 (16%)	
Alveolar Epithelium, Metaplasia, Squamous	(/	1 (2%)		/	
Perivascular, Hemorrhage		V/	1 (2%)	1 (2%)	
Perivascular, Inflammation, Chronic Active	1 (2%)		· · · · /	· -/	
Nose	(50)	(50)	(50)	(50)	

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Species/Strain: RATS/F 344/N

beta-Picoline CAS Number: 108-99-6 Date Report Requested: 05/27/2011 Time Report Requested: 10:09:55 First Dose M/F: 11/18/04 / 11/19/04

FISCHER 344 RATS MALE	0 mg/l	156.25 mg/l	312.5 mg/l	625 mg/l	
Edema				1 (2%)	
Foreign Body	10 (20%)	20 (40%)	15 (30%)	10 (20%)	
Inflammation	21 (42%)	23 (46%)	16 (32%)	24 (48%)	
Mineralization	_: (:=/0)	1 (2%)	. 0 (0=70)	= : ( :3,3)	
Necrosis	1 (2%)	( ( , , , , )			
Glands, Cyst	(=,-,			1 (2%)	
Nasolacrimal Duct, Foreign Body			1 (2%)	. (= /3)	
Nasolacrimal Duct, Hyperplasia, Squamous			1 (2%)		
Nasolacrimal Duct, Inflammation	1 (2%)		1 (2%)		
Olfactory Epithelium, Atrophy	. (= /3)		. (= /0)	1 (2%)	
Olfactory Epithelium, Erosion				1 (2%)	
Olfactory Epithelium, Metaplasia			1 (2%)	1 (2%)	
Olfactory Epithelium, Necrosis			. (270)	1 (2%)	
Respiratory Epithelium, Degeneration, Cystic	1 (2%)			. (=70)	
Respiratory Epithelium, Erosion	. (270)			1 (2%)	
Respiratory Epithelium, Hyperplasia	14 (28%)	20 (40%)	15 (30%)	17 (34%)	
Respiratory Epithelium, Metaplasia, Squamous	11 (2070)	1 (2%)	10 (0070)	(8 170)	
Respiratory Epithelium, Ulcer	2 (4%)	(270)			
Squamous Epithelium, Hyperplasia	2 (170)	1 (2%)	1 (2%)		
Trachea	(49)	(50)	(50)	(50)	
Amyloid Deposition	1 (2%)	(00)	(00)	(00)	
Inflammation	1 (270)			1 (2%)	
Glands, Cyst	2 (4%)			1 (270)	
	2 (470)				
SPECIAL SENSES SYSTEM					
Ear	(2)	(0)	(0)	(0)	
Cyst	1 (50%)				
Hyperplasia, Squamous	1 (50%)				
Eye	(50)	(50)	(50)	(50)	
Cataract	2 (4%)	3 (6%)	1 (2%)	3 (6%)	
Cornea, Hyperplasia, Squamous	,	,	2 (4%)	,	
Cornea, Inflammation, Chronic Active	1 (2%)		, ,	1 (2%)	
Retina, Degeneration	,	1 (2%)	1 (2%)	1 (2%)	
Sclera, Inflammation, Chronic Active	1 (2%)	, ,	,	1 (2%)	

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Lab: BAT

FISCHER 344 RATS MALE	0 mg/l	156.25 mg/l	312.5 mg/l	625 mg/l	
Harderian Gland	(50)	(50)	(50)	(50)	
Hyperplasia	1 (2%)		2 (4%)		
Zymbal's Gland	(1)	(0)	(1)	(1)	
URINARY SYSTEM					
Kidney	(50)	(50)	(50)	(50)	
Accumulation, Hyaline Droplet				1 (2%)	
Dilatation		1 (2%)			
Infarct, Acute		1 (2%)	1 (2%)	1 (2%)	
Metaplasia, Osseous		1 (2%)			
Nephropathy	48 (96%)	50 (100%)	50 (100%)	50 (100%)	
Medulla, Renal Tubule, Necrosis		1 (2%)			
Pelvis, Inflammation, Chronic Active		1 (2%)	2 (4%)		
Renal Tubule, Hyperplasia		1 (2%)		1 (2%)	
Urinary Bladder	(50)	(50)	(50)	(50)	
Hemorrhage		1 (2%)			
Infiltration Cellular, Mixed Cell, Chronic Active				1 (2%)	
Inflammation, Suppurative		1 (2%)			
Transitional Epithelium, Hyperplasia		1 (2%)			

<sup>\*\*\*</sup> END OF MALE \*\*\*

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Lab: BAT

FISCHER 344 RATS FEMALE	0 mg/l	156.25 mg/l	312.5 mg/l	625 mg/l	
Disposition Summary					
Animals Initially In Study	50	50	50	50	
Early Deaths					
Moribund Sacrifice	15	13	14	15	
Natural Death	5	5	3	5	
Survivors					
Natural Death	1				
Terminal Sacrifice	29	32	33	30	
Animals Examined Microscopically	50	50	50	50	
ALIMENTARY SYSTEM					
Esophagus	(50)	(50)	(50)	(50)	
Intestine Large, Cecum	(46)	(45)	(47)	(45)	
Inflammation, Chronic Active	1 (2%)	, ,		, ,	
Intestine Large, Colon	(47)	(48)	(50)	(49)	
Inflammation, Chronic Active	, ,	1 (2%)		, ,	
Parasite Metazoan	3 (6%)	2 (4%)	2 (4%)	1 (2%)	
Intestine Large, Rectum	(47)	(48)	(50)	(49)	
Inflammation, Chronic Active	, ,	1 (2%)	1 (2%)	, ,	
Parasite Metazoan	3 (6%)	8 (17%)	1 (2%)	7 (14%)	
Intestine Small, Duodenum	(50)	(47)	(50)	(50)	
Intestine Small, Ileum	(47)	(46)	(49)	(50)	
Inflammation, Chronic Active	1 (2%)	1 (2%)	1 (2%)		
Parasite Metazoan		·	•	1 (2%)	
Intestine Small, Jejunum	(48)	(46)	(47)	(48)	
Inflammation, Chronic Active	1 (2%)		2 (4%)	1 (2%)	
Liver	(50)	(50)	(50)	(50)	
Angiectasis		3 (6%)	1 (2%)		
Atypia Cellular			1 (2%)		
Basophilic Focus	37 (74%)	41 (82%)	46 (92%)	45 (90%)	
Clear Cell Focus	10 (20%)	12 (24%)	12 (24%)	10 (20%)	
Congestion	1 (2%)	1 (2%)	. ,	1 (2%)	
Degeneration, Cystic	1 (2%)				
Eosinophilic Focus	12 (24%)	14 (28%)	12 (24%)	13 (26%)	

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Species/Strain: RATS/F 344/N

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ISCHER 344 RATS FEMALE	0 mg/l	156.25 mg/l	312.5 mg/l	625 mg/l	
Fatty Change	8 (16%)	7 (14%)	8 (16%)	11 (22%)	
Fatty Change, Focal	2 (4%)	13 (26%)	7 (14%)	8 (16%)	
Hematopoietic Cell Proliferation	1 (2%)	10 (2070)	. (1.70)	3 (1373)	
Hepatodiaphragmatic Nodule	2 (4%)	7 (14%)	3 (6%)	1 (2%)	
Inflammation, Chronic Active	2 (4%)	4 (8%)	3 (6%)	. (270)	
Mixed Cell Focus	1 (2%)	2 (4%)	1 (2%)	3 (6%)	
Necrosis	1 (2%)	2 (170)	2 (4%)	3 (373)	
Regeneration	1 (2%)		2 (170)		
Vacuolization Cytoplasmic	4 (8%)	1 (2%)	2 (4%)		
Bile Duct, Hyperplasia	10 (20%)	2 (4%)	9 (18%)	7 (14%)	
Serosa, Fibrosis	10 (2070)	2 (170)	1 (2%)	2 (4%)	
Vein, Dilatation	1 (2%)		1 (270)	1 (2%)	
Vein, Indication Vein, Infiltration Cellular, Mixed Cell	1 (270)	1 (2%)		1 (270)	
Mesentery	(4)	(7)	(7)	(8)	
Fibrosis	(7)	(1)	(1)	1 (13%)	
Fat, Necrosis	4 (100%)	6 (86%)	6 (86%)	7 (88%)	
Oral Mucosa	(0)	(0)	(1)	(2)	
Gingival, Foreign Body	(0)	(0)	1 (100%)	1 (50%)	
Gingival, Inflammation, Chronic Active			1 (100%)	1 (3070)	
Pancreas	(50)	(50)	(49)	(50)	
Atrophy	(30)	(30)	1 (2%)	1 (2%)	
Basophilic Focus	1 (2%)		2 (4%)	1 (276)	
Cyst	1 (2%)	2 (4%)	2 (470)		
Infiltration Cellular	2 (4%)	2 (470)		1 (2%)	
Salivary Glands	(50)	(50)	(50)	(50)	
Atrophy	(50)	1 (2%)	1 (2%)	(30)	
Stomach, Forestomach	(50)		(50)	(50)	
Edema	(50)	(50)	1 (2%)	(50)	
Fibrosis	/ (OO/ \	1 (20/)	4 (8%)	1 (20/)	
	4 (8%)	1 (2%)	4 (8%) 1 (2%)	1 (2%)	
Hyperplasia, Basal Cell, Focal	7 (1/10/)	E (100/)		7 (1 (0/)	
Hyperplasia, Squamous Inflammation	7 (14%)	5 (10%)	6 (12%)	7 (14%)	
Ulcer	1 (2%)	2 (40/)	1 (2%)		
	1 (2%)	2 (4%)	3 (6%)	(FO)	
Stomach, Glandular	(50)	(50)	(49)	(50)	
Inflammation, Chronic Active	1 (2%)	1 (2%)	1 (2%)	1 (2%)	
Mineralization				2 (4%)	

a - Number of animals examined microscopically at site and number of animals with lesion

Test Type: CHRONIC

Route: DOSED WATER

**TDMS No.** 20009 - 03

Species/Strain: RATS/F 344/N

beta-Picoline **CAS Number:** 108-99-6

Date Report Requested: 05/27/2011 Time Report Requested: 10:09:55 First Dose M/F: 11/18/04 / 11/19/04

FISCHER 344 RATS FEMALE	0 mg/l	156.25 mg/l	312.5 mg/l	625 mg/l	
Ulcer	4 (20/)				
Tongue	1 (2%) (0)	(0)	(0)	(1)	
longue	(0)	(0)	(0)	(1)	
CARDIOVASCULAR SYSTEM					
Blood Vessel	(50)	(50)	(50)	(50)	
Aorta, Mineralization	,	,	,	1 (2%)	
Heart	(50)	(50)	(50)	(50)	
Cardiomyopathy	48 (96%)	50 (100%)	50 (100%)	49 (98%)	
Mineralization	,	,	,	2 (4%)	
Artery, Infiltration Cellular, Mononuclear Cell	1 (2%)			,	
Atrium, Thrombosis	1 (2%)	1 (2%)			
Endocardium, Hyperplasia	,	,	1 (2%)		
			. ,		
ENDOCRINE SYSTEM					
Adrenal Cortex	(50)	(50)	(50)	(50)	
Accessory Adrenal Cortical Nodule	1 (2%)	1 (2%)		1 (2%)	
Amyloid Deposition		1 (2%)			
Hyperplasia	26 (52%)	25 (50%)	34 (68%)	22 (44%)	
Necrosis	2 (4%)	1 (2%)	1 (2%)	1 (2%)	
Vacuolization Cytoplasmic	2 (4%)	1 (2%)	1 (2%)	1 (2%)	
Adrenal Medulla	(50)	(50)	(50)	(50)	
Hyperplasia	5 (10%)	3 (6%)	1 (2%)	3 (6%)	
Islets, Pancreatic	(50)	(49)	(50)	(50)	
Hyperplasia	. ,	,	, ,	1 (2%)	
Parathyroid Gland	(47)	(49)	(48)	(48)	
Hyperplasia	• •	, ,	, ,	1 (2%)	
Pituitary Gland	(50)	(49)	(49)	(50)	
Angiectasis	, ,	1 (2%)	. ,	, ,	
Cyst		, ,	1 (2%)		
Pars Distalis, Cyst	1 (2%)	1 (2%)	, ,	1 (2%)	
Pars Distalis, Hyperplasia	19 (38%)	19 (39%)	20 (41%)	20 (40%)	
Pars Intermedia, Hyperplasia	1 (2%)	` '	, ,	,	
Thyroid Gland	(50)	(48)	(50)	(50)	

beta-Picoline **CAS Number**: 108-99-6

Date Report Requested: 05/27/2011 Time Report Requested: 10:09:55 First Dose M/F: 11/18/04 / 11/19/04

Lab: BAT

FISCHER 344 RATS FEMALE	0 mg/l	156.25 mg/l	312.5 mg/l	625 mg/l	
Mineralization C-cell, Hyperplasia Follicle, Cyst	8 (16%)	6 (13%) 1 (2%)	5 (10%) 1 (2%)	1 (2%) 7 (14%)	
GENERAL BODY SYSTEM					
Peritoneum	(0)	(1)	(0)	(0)	
GENITAL SYSTEM					
Clitoral Gland Cyst Fibrosis Hyperplasia Inflammation Duct, Dilatation Ovary Atrophy Cyst Uterus Hemorrhage Inflammation, Suppurative Cervix, Cyst Endometrium, Hyperplasia, Cystic Vagina	(50) 1 (2%) 1 (2%) 2 (4%) 9 (18%) (50) 4 (8%) (50) 4 (8%) 1 (2%) (1)	(50) 1 (2%) 4 (8%) 5 (10%) 1 (2%) (50) 1 (2%) 3 (6%) (50) 1 (2%) 1 (2%) 2 (4%) 8 (16%) (1)	(50) 2 (4%) 1 (2%) 3 (6%) 6 (12%) (50) (50)  3 (6%) 7 (14%) (0)	(50) 1 (2%) 1 (2%) 4 (8%) 6 (12%)  (50) 1 (2%) 3 (6%) (50)  3 (6%) (50)  3 (6%) (50)	
HEMATOPOIETIC SYSTEM					
Bone Marrow Fibrosis	(50)	(50) 1 (2%)	(50)	(50)	
Lymph Node Deep Cervical, Ectasia	(5)	(7)	(5) 1 (20%)	(2)	
Deep Cervical, Hemorrhage Deep Cervical, Infiltration Cellular, Histiocyte		1 (14%)	1 (20%)		

a - Number of animals examined microscopically at site and number of animals with lesion

**TDMS No.** 20009 - 03

Test Type: CHRONIC

Route: DOSED WATER

Test Type: CHRONIC Route: DOSED WATER

**TDMS No.** 20009 - 03

Species/Strain: RATS/F 344/N

beta-Picoline
CAS Number: 108-99-6

Date Report Requested: 05/27/2011 Time Report Requested: 10:09:55 First Dose M/F: 11/18/04 / 11/19/04

FISCHER 344 RATS FEMALE	0 mg/l	156.25 mg/l	312.5 mg/l	625 mg/l	
Mediastinal, Ectasia		1 (14%)			
Mediastinal, Ectasia  Mediastinal, Hemorrhage		1 (14%)		1 (50%)	
Mediastinal, Hyperplasia		1 (14%)		1 (30 %)	
Mediastinal, Infiltration Cellular, Histiocyte		1 (1470)		1 (50%)	
Mediastinal, Infiltration Cellular, Mixed Cell			1 (20%)	1 (30 %)	
Pancreatic, Ectasia	1 (20%)		1 (2070)		
	1 (20%) (50)	(50)	(50)	(50)	
Lymph Node, Mesenteric Ectasia	(50)	(50)	(50)	(50)	
			1 (2%)		
Infiltration Cellular, Mast Cell			1 (2%)		
Infiltration Cellular, Mononuclear Cell			1 (2%)	. (221)	
Infiltration Cellular, Plasma Cell				1 (2%)	
Spleen	(50)	(50)	(50)	(50)	
Angiectasis			1 (2%)		
Atrophy			1 (2%)	2 (4%)	
Degeneration, Cystic, Focal			1 (2%)		
Hyperplasia, Lymphoid	4 (8%)	2 (4%)	1 (2%)		
Necrosis		1 (2%)		1 (2%)	
Thymus	(49)	(50)	(50)	(47)	
Cyst	1 (2%)			1 (2%)	
Fibrosis				1 (2%)	
Hyperplasia, Lymphoid	1 (2%)				
Inflammation, Suppurative				1 (2%)	
INTEGUMENTARY SYSTEM					
Mammary Gland	(50)	(50)	(50)	(50)	
Galactocele	12 (24%)	8 (16%)	3 (6%)	4 (8%)	
Hyperplasia	4 (8%)	4 (8%)	6 (12%)	4 (8%)	
Inflammation	1 (2%)	()	/	,	
Skin	(50)	(50)	(50)	(50)	
Fibrosis	1 (2%)	(/	1 (2%)	(,	
Hyperplasia, Squamous	- (=,0)		1 (2%)		
Inflammation, Chronic Active		1 (2%)	. (= /0)		
Ulcer		2 (4%)	2 (4%)	1 (2%)	
Lip, Inflammation, Suppurative		2 (T/0)	<u> </u>	1 (2%)	

a - Number of animals examined microscopically at site and number of animals with lesion

beta-Picoline

**CAS Number:** 108-99-6

Date Report Requested: 05/27/2011 Time Report Requested: 10:09:55 First Dose M/F: 11/18/04 / 11/19/04

Lab: BAT

FISCHER 344 RATS FEMALE	0 mg/l	156.25 mg/l	312.5 mg/l	625 mg/l	
MUSCULOSKELETAL SYSTEM					
Bone	(50)	(50)	(50)	(50)	
Cyst				1 (2%)	
Hyperostosis	1 (2%)				
Inflammation, Chronic Active	1 (2%)		4-5	1 (2%)	
Skeletal Muscle	(0)	(1)	(0)	(0)	
NERVOUS SYSTEM					
Brain	(50)	(50)	(50)	(50)	
Compression	13 (26%)	7 (14%)	7 (14%)	9 (18%)	
Hemorrhage		2 (4%)		1 (2%)	
Inflammation, Chronic Active		1 (2%)			
RESPIRATORY SYSTEM					
Lung	(50)	(50)	(50)	(50)	
Fibrosis				1 (2%)	
Foreign Body	1 (2%)				
Inflammation, Suppurative			1 (2%)		
Inflammation, Granulomatous	1 (2%)		1 (2%)		
Inflammation, Chronic Active	1 (2%)				
Metaplasia, Squamous	1 (2%)				
Pigmentation	1 (2%)				
Thrombosis				1 (2%)	
Alveolar Epithelium, Hyperplasia	7 (14%)	14 (28%)	14 (28%)	11 (22%)	
Alveolar Epithelium, Metaplasia, Squamous		3 (6%)	1 (2%)	1 (2%)	
Bronchiole, Inflammation, Suppurative			1 (2%)		
Bronchiole, Inflammation, Chronic Active			2 (4%)		
Serosa, Fibrosis		1 (2%)	4 (651)	2 (4%)	
Serosa, Inflammation, Granulomatous	(=0)	(50)	1 (2%)	(50)	
Nose	(50)	(50)	(50)	(50)	

a - Number of animals examined microscopically at site and number of animals with lesion

**TDMS No.** 20009 - 03

Test Type: CHRONIC

Route: DOSED WATER

**TDMS No.** 20009 - 03

Test Type: CHRONIC

Route: DOSED WATER

Species/Strain: RATS/F 344/N

beta-Picoline
CAS Number: 108-99-6

Fire

Date Report Requested: 05/27/2011 Time Report Requested: 10:09:55 First Dose M/F: 11/18/04 / 11/19/04

4%) 6%) 2%) 4%) 6%)	3 (6%) 5 (10%) 1 (2%) 1 (2%) 1 (2%) 1 (2%) (50) 1 (2%)	3 (6%) 4 (8%) 1 (2%) (50)	2 (4%) 3 (6%) 2 (4%) 2 (4%) (50)	
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2%) 4%) 6%)	1 (2%) 1 (2%) 1 (2%) 1 (2%) (50)	1 (2%)	2 (4%) 2 (4%)	
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4%) 6%)	1 (2%) 1 (2%) (50)		2 (4%)	
6%)	1 (2%) 1 (2%) (50)		2 (4%)	
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50)	(48)	(48)	(50)	
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16%)	13 (27%)	14 (29%)	10 (20%)	
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	1 (2%)	,		
4%)	,	1 (2%)		
	2 (4%)		3 (6%)	
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0)	(0)	(2)	(1)	
49)	(50)	(50)	(50)	
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2%)		( - / - /		
. · · · /			1 (2%)	
16%)	7 (14%)	8 (16%)		
1	49) 2%) 16%)	2%) 2 (4%) 50) (50) 2%) 4%) 1 (2%) 0) (0) 49) (50) 2%) 16%) 7 (14%)	1 (2%) 1 (2%) 1 (2%) 1 (2%) 2 (4%) 5 (50) (50) (50) 2 (4%) 2 (4%) 2 (4%) 2 (4%) 2 (4%) 3 (50) (50) 2 (4%) 4 (50) (50) 2 (4%) 4 (50) 2 (4%)	1 (2%) 1 (2%) 1 (2%) 1 (2%) 2 (4%) 2 (4%) 3 (6%) 50) (50) (50) (50) (50) 2 (4%) 1 (2%) 2%) 4%) 1 (2%) 0) (50) (50) (50) (50) (1)  49) (50) (50) (50) (50) (50) (50) (50) (50

**TDMS No.** 20009 - 03

Test Type: CHRONIC

Route: DOSED WATER

Species/Strain: RATS/F 344/N

beta-Picoline
CAS Number: 108-99-6

Date Report Requested: 05/27/2011 Time Report Requested: 10:09:55 First Dose M/F: 11/18/04 / 11/19/04

Lab: BAT

FISCHER 344 RATS FEMALE	0 mg/l	156.25 mg/l	312.5 mg/l	625 mg/l	
Infarct	7 (14%)	8 (16%)	4 (8%)	5 (10%)	
Mineralization	,	,	,	2 (4%)	
Nephropathy	47 (96%)	50 (100%)	48 (96%)	50 (100%)	
Papilla, Hemorrhage	1 (2%)		5 (10%)	1 (2%)	
Pelvis, Inflammation, Chronic Active	8 (16%)	9 (18%)	8 (16%)	10 (20%)	
Pelvis, Metaplasia, Squamous	` ,	, ,	1 (2%)	, ,	
Urinary Bladder	(50)	(50)	(50)	(50)	
Infiltration Cellular, Chronic Active	, ,	, ,	1 (2%)	, ,	
Transitional Epithelium, Hyperplasia			1 (2%)		

\*\*\* END OF REPORT \*\*\*

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